CLAIMS

in Application entitled

PARALLEL-TUNED ELECTRONIC BALLAST

subt A2

1. A ballast for a gas discharge lamp, comprising:

a source operative, between a first and a second DC output terminal, to provide a DC voltage of substantially constant magnitude; and

inverter-type power supply connected with the DC output terminals and operative to provide a high-frequency AC voltage between a first inverter output terminal and an inverter reference terminal; the high-frequency AC voltage being of a certain magnitude and a certain frequency; the certain frequency being substantially higher than the frequency of the power line voltage on an ordinary electric utility power line; the power supply including a tuned L-C circuit connected with the first inverter output terminal and the inverter reference terminal; the L-C circuit having a tank capacitor parallel-connected with a tank inductor and being resonant at or near said certain frequency; any high-frequency voltage existing between the inverter reference terminal and the first DC output terminal being of magnitude negligible in comparison with said certain magnitude.

2. The ballast of claim 1 wherein, between the first DC output terminal and the inverter reference terminal, there exists a short circuit for currents of said certain frequency.

3. The ballast of claim 1 wherein the power supply includes two transistors series-connected across a pair of inverter DC input terminals.

4. The ballast of claim 1 wherein the power supply includes: (i) a first and a second DC input terminal; and (ii) current-limiting inductor means connected in circuit between the DC input terminals and the DC output terminals.

5. The ballast of claim 4 wherein the current-limiting means includes an inductor having a first and a second winding; the first winding being connected between the first DC output terminal and the first DC input terminal; the second winding being connected between the second DC output terminal and the second DC input terminal.

6. The ballast of claim 1 wherein: (i) the power supply has a second inverter output terminal; and (ii) a voltage of magnitude and frequency equal to that of the high-frequency AC voltage exists between the second inverter output terminal and the inverter reference terminal.

7. The combination of claim 1 wherein the high-frequency AC voltage consists of periodically repeating voltage cycles, with each voltage cycle having a complete cycle period and including: (i) a sinusoidally-shaped negative voltage pulse; (ii) a sinusoidally-shaped positive voltage pulse; and (iii) a period of zero-magnitude voltage connecting each voltage pulse;

the combination being functional such that:

(a) the duration of each negative voltage pulse is approximately equal to that of each positive voltage pulse; and

(b) the duration of each period of zero-magnitude voltage is shorter than the duration of each voltage pulse.

8. The combination of claim 7 wherein the duration of each period of zero-magnitude voltage represents a significant fraction of the duration of each voltage pulse.

9. The combination of claim 7 wherein the duration of each period of zero-magnitude voltage represents more than about one tenth the duration of each voltage pulse.

10. An arrangement comprising:

a source operative to provide, between a first and a second DC output terminal, a DC voltage of substantially constant magnitude;

inverter-type power supply connected with the DC output terminals and operative to provide a first high-frequency AC output voltage between a first inverter output terminal and an inverter reference terminal; the first high-frequency AC output voltage being of a certain magnitude and of a certain frequency; the certain frequency being substantially higher than the frequency of the power line voltage on an ordinary electric utility power line; the power supply including an L-C circuit connected with the first inverter output terminal and the inverter reference terminal; the L-C circuit having a capacitor parallel-connected with an inductor; the parallel-connected capacitor and inductor being resonant at or near said certain frequency; any high-frequency voltage existing between the inverter reference terminal and the first DC output terminal being of magnitude negligible in comparison with said certain magnitude; and

gas discharge lamp connected in circuit with the first inverter output terminal and the inverter reference terminal by way of a reactive current-limiting means.

11. The arrangement of claim 10 wherein: (i) the power supply has a second inverter output terminal; (ii) a second high-frequency AC output voltage exists between the inverter reference terminal and the second inverter output terminal; and (iii) the magnitude and the frequency of the second high-frequency AC output voltage are substantially equal to those of the first high-frequency AC output voltage.

12. An arrangement comprising:

a source operative to provide, between a first and a second DC output terminal, a DC voltage of substantially constant magnitude;

inverter-type power supply having a first and a second DC input terminal; the DC input terminals being connected with the DC output terminals by way of a current-limiting inductor means; the power supply being operative to provide a first high-frequency AC output voltage between a first inverter output terminal and an inverter reference terminal; the first high-frequency AC output voltage being of a certain magnitude and a certain frequency; the certain frequency being substantially higher than the frequency of the power line voltage on an ordinary electric utility power line; the power supply including an L-C circuit connected with the first inverter output terminal and the inverter reference terminal; the L-C circuit having a capacitor parallel-connected with an inductor; the parallel-connected capacitor and inductor being resonant at or near said certain frequency; any high-frequency voltage existing between the inverter reference terminal and the first DC output terminal being of magnitude negligible in comparison with said certain magnitude; and

gas discharge lamp connected in circuit with the first inverter output terminal and the inverter reference terminal by way of a current-limiting means.

13. The arrangement of claim 12 wherein the power supply is characterized by including: (i) a junction; (ii) a first transistor connected between the junction and the first DC input terminal; and (iii) a second transistor connected between the junction and the second DC input terminal.